CSABA D. TOTH, MIT, Cambridge, MA 02144
Spanning trees for disjoint barriers in three-space

Given n point sites and a set of disjoint barriers in three-space, we wish to connect the sites with a straight line spanning tree such that no barrier intersects "too many" edges of the tree. We show that if the barriers are convex 2-dimensional objects of bounded description complexity, then there is a spanning tree such that every barrier cuts at most $\tilde{O}(\sqrt{n})$ of its edges. If the barriers are axis-aligned rectangles, then there is a spanning tree such that every rectangle cuts at most $O(n^{1/3})$ of its edges. Both bounds are asymptotically optimal.

Joint work with Eynat Rafalin and Diane Souvaine.